



2016



GOES-R

Geostationary Operational Environmental Satellite - R series

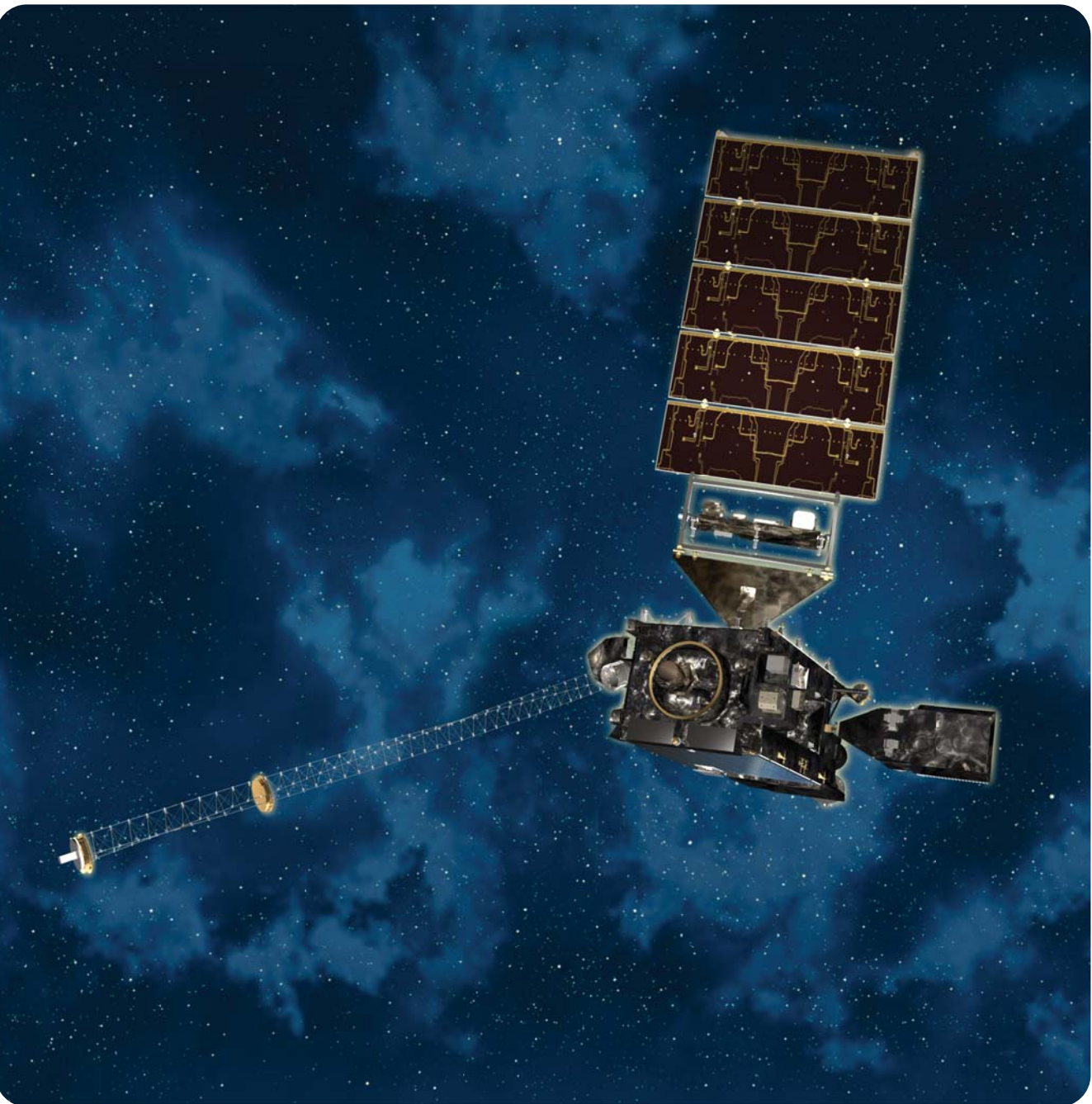
JPSS

Joint Polar Satellite System

NOAA's Next-Generation Environmental Satellites

JPSS

The Joint Polar Satellite System (JPSS) is NOAA's next generation of polar-orbiting environmental satellites. The satellite constellation is comprised of the currently flying Suomi NPP satellite, launched in 2011, and the future JPSS-1 and JPSS-2 satellites to be launched in 2017 and 2021, respectively. JPSS satellites simultaneously provide sophisticated meteorological data and observations of atmosphere, ocean and land for short-term, seasonal and long-term monitoring and forecasting. The most important function of JPSS is to increase the timeliness and accuracy of forecasts three to seven days in advance of a severe weather event. NOAA's National Weather Service uses JPSS data as critical input for numerical forecast models, providing the basis for these mid-range forecasts. These forecasts allow for early warnings and enable emergency managers to make timely decisions to protect American lives and property, including ordering effective evacuations.



GOES-R series

The Geostationary Operational Environmental Satellites – R Series (GOES-R) is the next generation of NOAA geostationary weather satellites. GOES-R will provide continuous imagery and atmospheric measurements of Earth's Western Hemisphere and space weather monitoring to provide critical atmospheric, hydrologic, oceanic, climatic, solar and space data. GOES-R series environmental data products will improve short-term weather forecasts, increase thunderstorm and tornado warning lead time, improve hurricane tracking and intensity forecasts, improve aviation flight route planning, provide data for long-term climate variability studies, and improve solar flare warnings for communications and navigation disruptions. GOES-R will also support maritime forecasts, seasonal predictions, drought outlooks and space weather predictions. The GOES-R series (GOES-R, S, T, and U) will extend the availability of the operational GOES satellite system through 2036. The first satellite in the series is scheduled for launch in October 2016.



Sarychev Peak Eruption, Kuril Islands, Russia, on June 12, 2009. Credit: NASA/JSC/Image Science and Analysis Laboratory

January 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																						
<div>DECEMBER</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr><tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr><tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr><tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			<div>FEBRUARY</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr><tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr><tr><td>28</td><td>29</td><td></td><td></td><td></td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29									<div><div></div><div>New Year's Day</div></div> 1	<div><div></div><div>Perihelion</div></div> 2
S	M	T	W	T	F	S																																																																						
6	7	8	9	10	11	12																																																																						
13	14	15	16	17	18	19																																																																						
20	21	22	23	24	25	26																																																																						
27	28	29	30	31																																																																								
S	M	T	W	T	F	S																																																																						
7	8	9	10	11	12	13																																																																						
14	15	16	17	18	19	20																																																																						
21	22	23	24	25	26	27																																																																						
28	29																																																																											
3	4	5	6	7	8	<div><div></div>9</div>																																																																						
10	11	12	13	14	15	<div><div></div>16</div>																																																																						
17	18 <div>Martin Luther King, Jr., Day observed</div>	19	20	21	22	<div><div></div>23</div>																																																																						
<div>31</div> <div></div>	24	25	26	27	28	29																																																																						
						30																																																																						

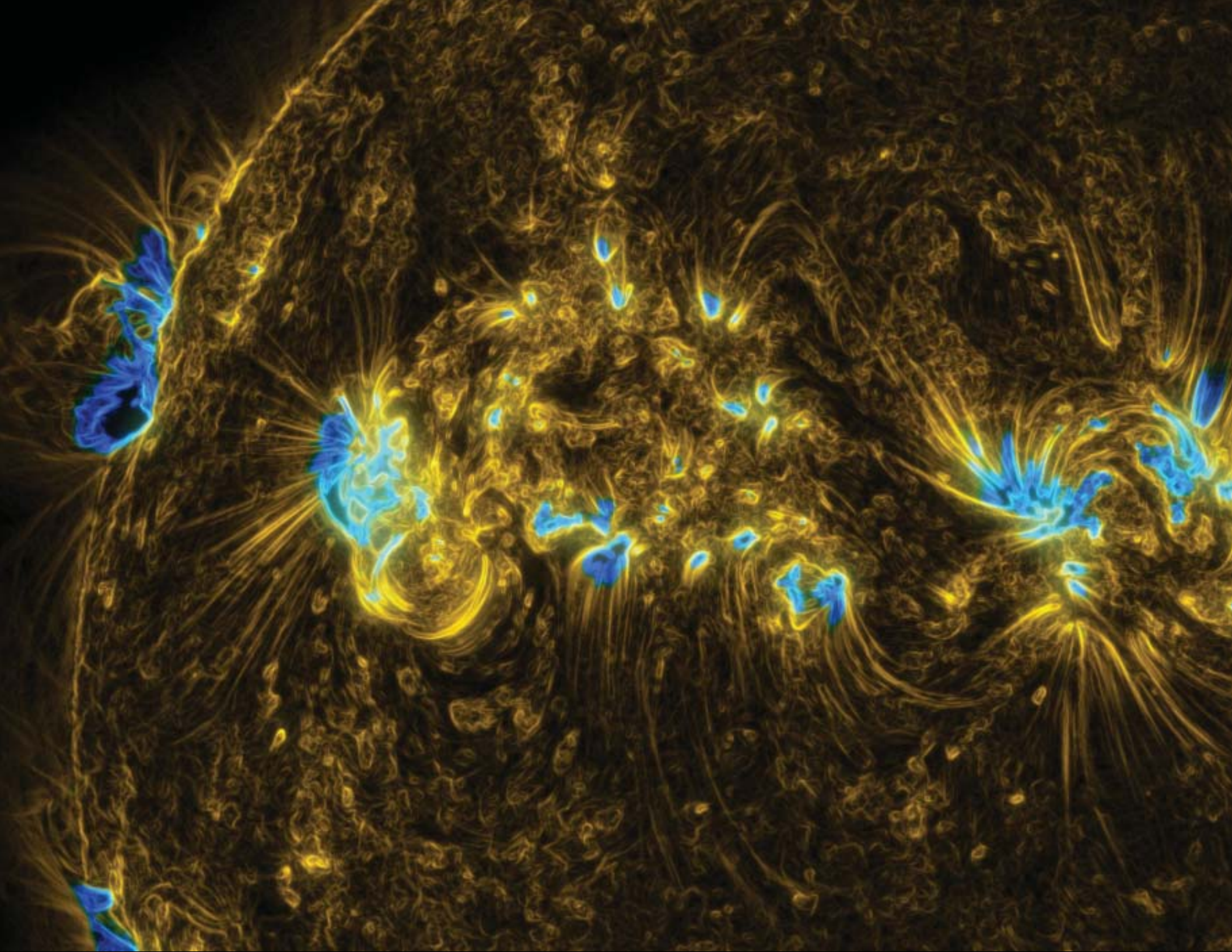
Detecting volcanic ash in the atmosphere

Airborne volcanic ash has significant aviation, health, infrastructure and economic impacts. It is important to monitor volcanic regions and promptly identify ash clouds. Both the advanced spectral, spatial and temporal resolution of the GOES-R Advanced Baseline Imager (ABI) and the high-resolution imagery and global reach of JPSS's Visible and Infrared Imaging and Radiometer Suite (VIIRS) instrument will be used to generate a complete set of volcanic cloud detection and monitoring products, resulting in improved air and ground safety.

Calbuco Volcano in southern Chile erupted on April 23, 2015, for the first time since 1972, with the last major eruption occurring in 1961 that sent ash columns 12-15 kilometers high. This image was taken by the Suomi NPP satellite's VIIRS instrument in a high-resolution infrared channel.



Credit: NOAA/NASA



Active region on the sun showing plasma in the solar atmosphere, called the corona, that is around 600,000 Kelvin. Credit: NASA/SDO/GSFC

February 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6
				NOAA-19 launched, 2009		SMS-2 launched, 1975
7	8	9	10	11	12	13
14	15	16	17	18	19	20
Valentine's Day	Presidents' Day					
21	22	23	24	25	26	27
					GOES-7 launched, 1987	
28	29					

JANUARY

S	M	T	W	T	F	S
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

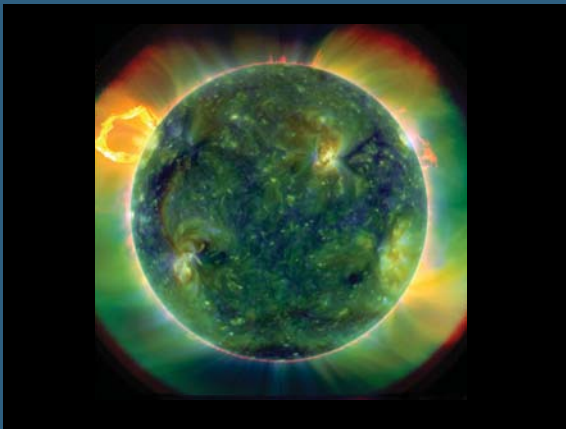
MARCH

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Forecasting space weather

The Extreme Ultraviolet and X-ray Irradiance Sensors (EXIS) on the GOES-R series will monitor solar irradiance in the upper atmosphere. On board EXIS are two main sensors, the Extreme Ultraviolet Sensor (EUVS) and the X-Ray Sensor (XRS). EUVS will measure changes in the solar extreme ultraviolet irradiance which drive upper atmospheric variability on all time scales, changing the environment in which low earth orbit satellites fly and affecting telecommunications and navigation systems. The XRS monitors solar flares and helps predict solar proton events that can penetrate Earth's magnetic field. The EXIS instrument will be able to detect solar flares that could interrupt communications and reduce navigational accuracy, affecting satellites, high altitude airlines and power grids on Earth.

Extreme ultraviolet composite solar image.



Credit: NASA/NOAA



San Francisco engulfed in fog at sunrise on December 6, 2014. Photo: Anthony Quintano (CC BY 2.0)

March 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

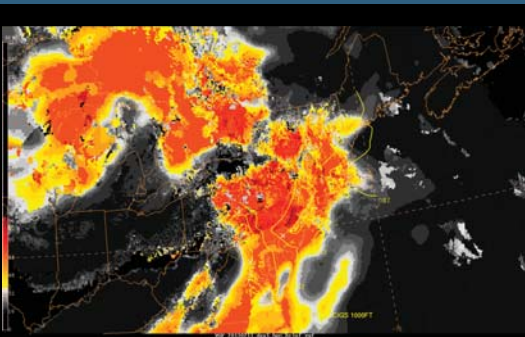
LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																						
<div><div>FEBRUARY</div><table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr><tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr><tr><td>28</td><td>29</td><td></td><td></td><td></td><td></td><td></td></tr></table></div>	S	M	T	W	T	F	S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29						<div><div>APRIL</div><table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr><tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr><tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table></div>	S	M	T	W	T	F	S	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	<div><div></div><div>1</div></div>	<div><div></div><div>2</div></div>	<div><div></div><div>3</div></div>	<div><div></div><div>4</div></div> <div>GOES-15 launched, 2010</div>	<div><div></div><div>5</div></div>
S	M	T	W	T	F	S																																																																						
7	8	9	10	11	12	13																																																																						
14	15	16	17	18	19	20																																																																						
21	22	23	24	25	26	27																																																																						
28	29																																																																											
S	M	T	W	T	F	S																																																																						
3	4	5	6	7	8	9																																																																						
10	11	12	13	14	15	16																																																																						
17	18	19	20	21	22	23																																																																						
24	25	26	27	28	29	30																																																																						
<div><div>6</div></div>	<div><div>7</div></div>	<div><div></div><div>8</div></div>	<div><div></div><div>9</div></div>	<div><div></div><div>10</div></div>	<div><div></div><div>11</div></div>	<div><div></div><div>12</div></div>																																																																						
<div><div>13</div><div>Daylight Saving Time begins</div></div>	<div><div>14</div></div>	<div><div></div><div>15</div></div>	<div><div></div><div>16</div></div>	<div><div></div><div>17</div></div>	<div><div></div><div>18</div></div>	<div><div></div><div>19</div></div>																																																																						
<div><div>20</div><div>Vernal Equinox</div></div>	<div><div>21</div></div>	<div><div>22</div></div>	<div><div></div><div>23</div></div>	<div><div></div><div>24</div></div>	<div><div></div><div>25</div></div>	<div><div></div><div>26</div></div>																																																																						
<div><div>27</div><div>Easter</div></div>	<div><div>28</div><div>NOAA-8 launched, 1983</div></div>	<div><div>29</div></div>	<div><div>30</div></div>	<div><div></div><div>31</div></div>																																																																								

Using satellite data to improve transportation safety

Fog and low stratus clouds are a transportation hazard. Foggy conditions can drastically reduce visibility, creating dangerous situations for vehicles on roadways as well as airplanes, trains, boats and other modes of transportation. The improved spatial and temporal resolution of the GOES-R series Advanced Baseline Imager will allow forecasters to better identify potential hazards caused by fog and low stratus and also identify when these areas are moving or dissipating. Unlike qualitative imagery-based products, the GOES-R fog/low stratus products can be used to quantitatively identify the probability of Instrument Flight Rules (IFR) conditions, even when multiple cloud layers are present, day and night. IFR are a set of regulations established by the Federal Aviation Administration that dictate how aircraft are to be operated when the pilot is unable to navigate using visual references.

GOES-R fog/low stratus product using GOES-13 data.



Credit: NOAA/ Cooperative Institute for Meteorological Satellite Studies



Tornado forming near Groom, Texas, April 16, 2015. Photo: Kelly DeLay (CC BY-NC 2.0)

April 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

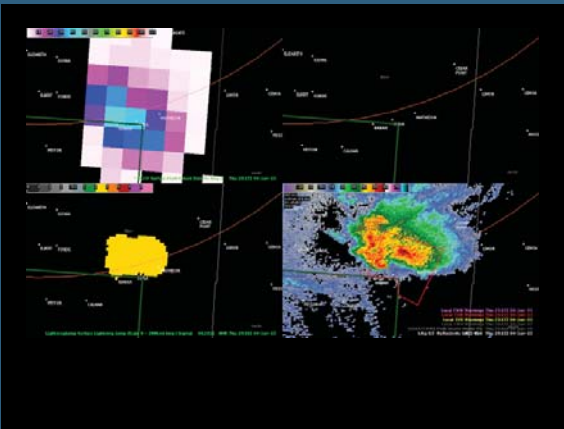
LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																													
<div>MARCH</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr><tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr><tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr><tr><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			<div>MAY</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr><tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr><tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr><tr><td>29</td><td>30</td><td>31</td><td></td><td></td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								1	2
S	M	T	W	T	F	S																																																																													
6	7	8	9	10	11	12																																																																													
13	14	15	16	17	18	19																																																																													
20	21	22	23	24	25	26																																																																													
27	28	29	30	31																																																																															
S	M	T	W	T	F	S																																																																													
1	2	3	4	5	6	7																																																																													
8	9	10	11	12	13	14																																																																													
15	16	17	18	19	20	21																																																																													
22	23	24	25	26	27	28																																																																													
29	30	31																																																																																	
3	4	5	6	<div></div> 7	8	9																																																																													
10	11	12	<div></div> 13 <div>GOES-8 launched, 1994</div>	14	15	16																																																																													
17	18	19	20	<div></div> 21	22 <div>Earth Day</div>	23																																																																													
24	25 <div>GOES-10 launched, 1997</div>	26	27	28 <div>GOES-6 launched, 1983</div>	<div></div> 29	30																																																																													

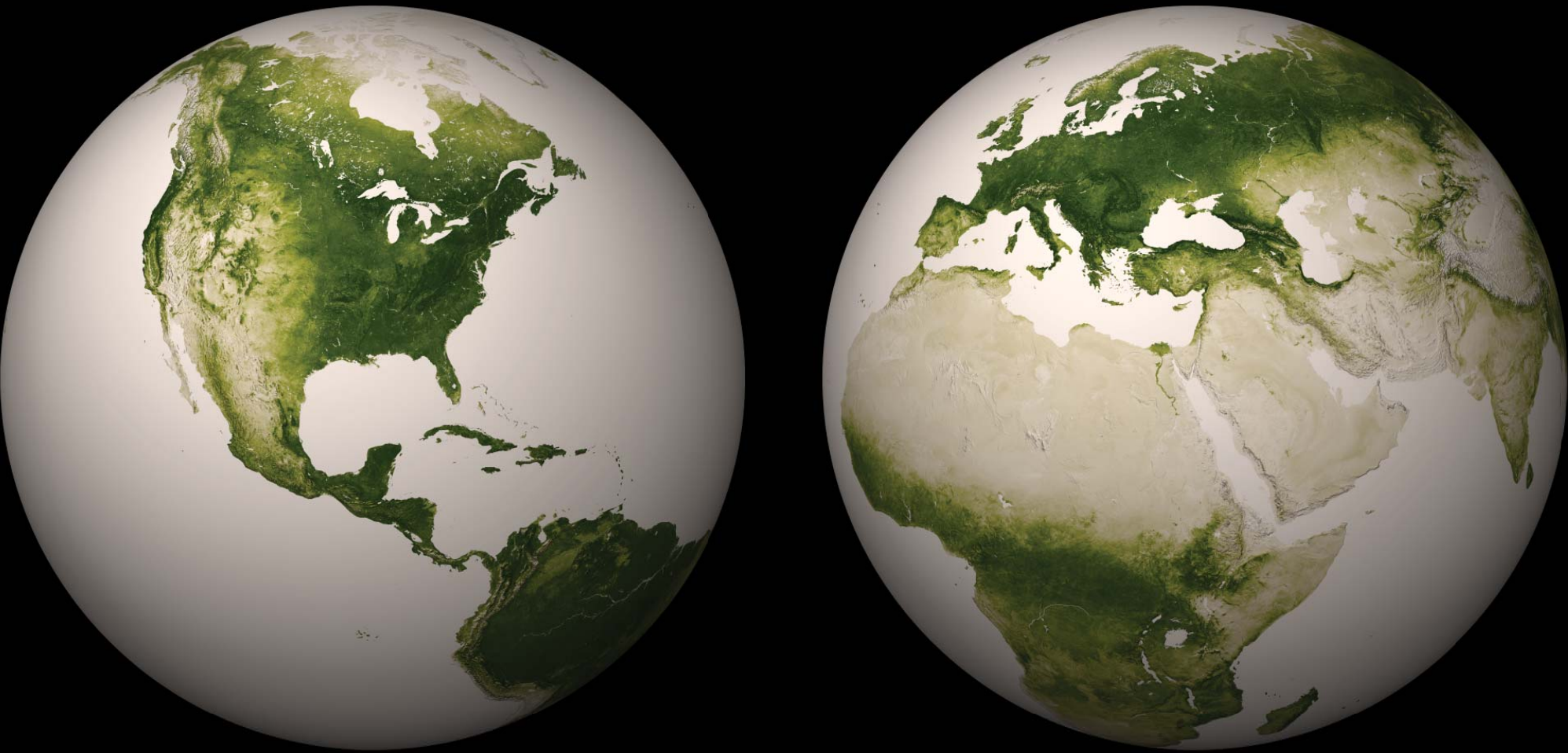
Lightning and severe storms

The GOES-R series Geostationary Lightning Mapper (GLM) will be the first instrument of its kind flown in geostationary orbit. GLM will map total lightning (in-cloud and cloud-to-ground) continuously over the Americas and adjacent ocean regions. Research has shown that lightning flash rate increases can be a predictor of impending severe weather. Trends in total lightning that will be available with the GLM have the promise of providing critical information to forecasters that will allow them to focus on storms much earlier than they can currently, and before these storms produce damaging winds, hail or even tornadoes at the ground. Total lightning data from GLM has great potential to increase lead-time for severe weather warnings.

GOES-R pseudo Geostationary Lightning Mapper lightning jump data was used to issue a tornado warning near Simla, Colorado, on June 4, 2015. The lightning jump preceded tornado development by 16 minutes.



Credit: NOAA Hazardous Weather Testbed



Vegetation index. Credit: NOAA

May 2016

Moon phases are Universal Time (UT)

NEW MOON FIRST QUARTER FULL MOON LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																						
1	2	3 GOES-11 launched, 2000	4	5	6	7																																																																						
8 Mother's Day	9	10	11	12	13 NOAA-15 launched, 1998	14 NOAA-12 launched, 1991																																																																						
15	16	17 SMS-1 launched, 1974	18	19	20 NOAA-18 launched, 2005	21 																																																																						
22 GOES-5 launched, 1981	23 GOES-9 launched, 1995	24 GOES-13 launched, 2006	25	26	27	28																																																																						
29 Memorial Day	30	31			<div>APRIL</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>1</td></tr><tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>2</td></tr><tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr><tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table>	S	M	T	W	T	F	S	3	4	5	6	7	8	1	10	11	12	13	14	15	2	17	18	19	20	21	22	23	24	25	26	27	28	29	30	<div>JUNE</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>5</td><td>6</td><td>7</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>12</td><td>13</td><td>14</td><td>8</td><td>9</td><td>10</td><td>11</td></tr><tr><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr><tr><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	5	6	7	1	2	3	4	12	13	14	8	9	10	11	19	20	21	22	23	24	25	26	27	28	29	30		
S	M	T	W	T	F	S																																																																						
3	4	5	6	7	8	1																																																																						
10	11	12	13	14	15	2																																																																						
17	18	19	20	21	22	23																																																																						
24	25	26	27	28	29	30																																																																						
S	M	T	W	T	F	S																																																																						
5	6	7	1	2	3	4																																																																						
12	13	14	8	9	10	11																																																																						
19	20	21	22	23	24	25																																																																						
26	27	28	29	30																																																																								

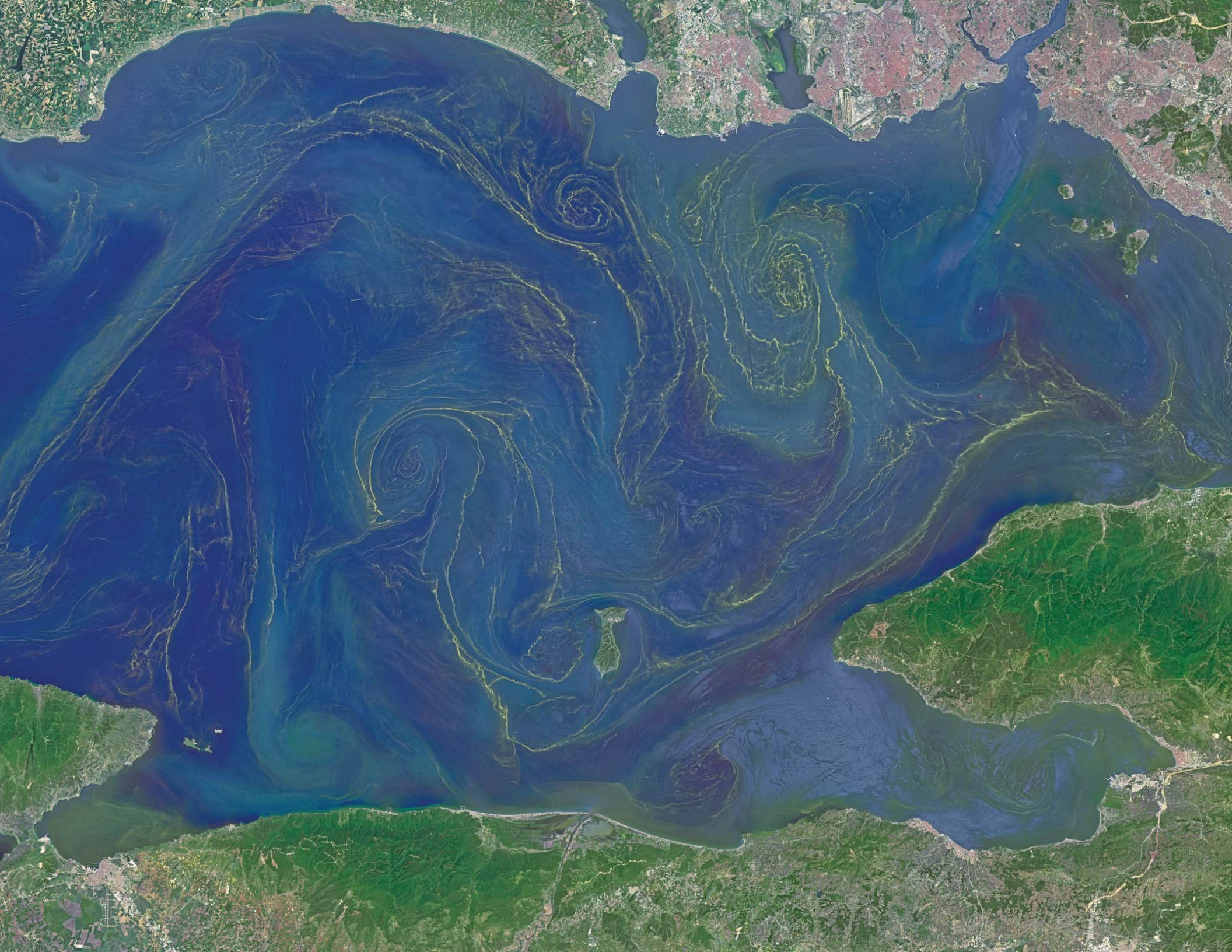
Monitoring vegetative health

Data from the Visible and Infrared Imaging and Radiometer Suite (VIIRS) sensor aboard the NASA/NOAA Suomi NPP satellite is able to detect subtle differences in the greenness of Earth's vegetation. More vegetated areas absorb more visible light and reflect more near-infrared light back into space. VIIRS can detect these relative differences, which are used to create vegetation indices. The darkest green areas are the lushest in vegetation, while the pale colors are sparse in vegetation cover either due to snow, drought, rock, or urban areas. Because vegetation greatly affects the runoff, surface temperature, and relative humidity of an area, more complex weather forecasts are beginning to integrate vegetation dynamics into numerical models.

Vegetation health during the tenth year of mega-drought in the Western U.S. is shown in these Suomi NPP satellite images.



Credit: NOAA/NASA



The Operational Land Imager on the Landsat 8 satellite captured this image of a phytoplankton bloom in the Sea of Marmara on May 17, 2015. The sea is surrounded on all sides by the nation of Turkey. Credit: NASA Earth Observatory

June 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																				
<div><div>MAY</div><table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr><tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr><tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr><tr><td>29</td><td>30</td><td>31</td><td></td><td></td><td></td><td></td></tr></table></div>	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					<div><div>JULY</div><table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr><tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr><tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></div>	S	M	T	W	T	F	S	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								<div>1Atlantic hurricane season begins</div>	<div>2</div>	<div>3</div>	<div><div>4</div><div></div></div>
S	M	T	W	T	F	S																																																																																				
1	2	3	4	5	6	7																																																																																				
8	9	10	11	12	13	14																																																																																				
15	16	17	18	19	20	21																																																																																				
22	23	24	25	26	27	28																																																																																				
29	30	31																																																																																								
S	M	T	W	T	F	S																																																																																				
3	4	5	6	7	8	9																																																																																				
10	11	12	13	14	15	16																																																																																				
17	18	19	20	21	22	23																																																																																				
24	25	26	27	28	29	30																																																																																				
31																																																																																										
<div>5</div>	<div>6</div>	<div>7</div>	<div>8</div>	<div>9</div>	<div>10</div>	<div>11</div>																																																																																				
<div><div></div><div>12</div></div>	<div>13</div>	<div>14</div>	<div>15</div>	<div>16</div>	<div>17</div>	<div>18</div>																																																																																				
			<div>GOES-3 launched, 1978</div>	<div>GOES-2 launched, 1977</div>																																																																																						
<div>19Father's Day</div>	<div>20Summer Solstice</div>	<div>21</div>	<div>22</div>	<div>23</div>	<div>24</div>	<div>25</div>																																																																																				
	<div>26</div>	<div>27</div>	<div>28</div>	<div>29</div>	<div>30</div>																																																																																					
	<div>NOAA-6 launched, 1979</div> <div>GOES-14 launched, 2009</div>																																																																																									

An eye on healthy water

Not only does NOAA monitor ocean health, but also the health of rivers and lakes. NOAA, NASA, the Environmental Protection Agency and the U.S. Geological Survey developed an early warning system for detecting harmful and nuisance algal blooms in freshwater bodies such as the Great Lakes. A central part of this plan is the use of satellite remote sensing capabilities to identify algal blooms.

Massive algal bloom in Lake Erie as seen by the Suomi NPP satellite's VIIRS instrument on March 21, 2012.



Credit: NOAA Visualization Laboratory, NOAA/NASA Suomi NPP VIIRS



Severe storm moving through Coles County, Illinois. Photo: Mellinda Swinford. (CC BY-NC-ND 2.0)

July 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

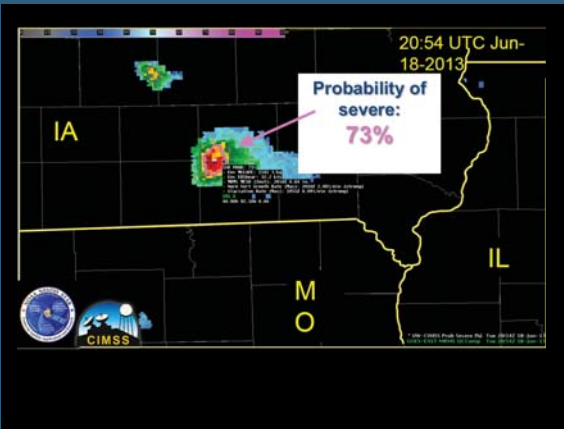
LAST QUARTER

SUNDAY								MONDAY								TUESDAY								WEDNESDAY								THURSDAY								FRIDAY								SATURDAY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
JUNE								AUGUST																																1								2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
S	M	T	W	T	F	S		S	M	T	W	T	F	S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

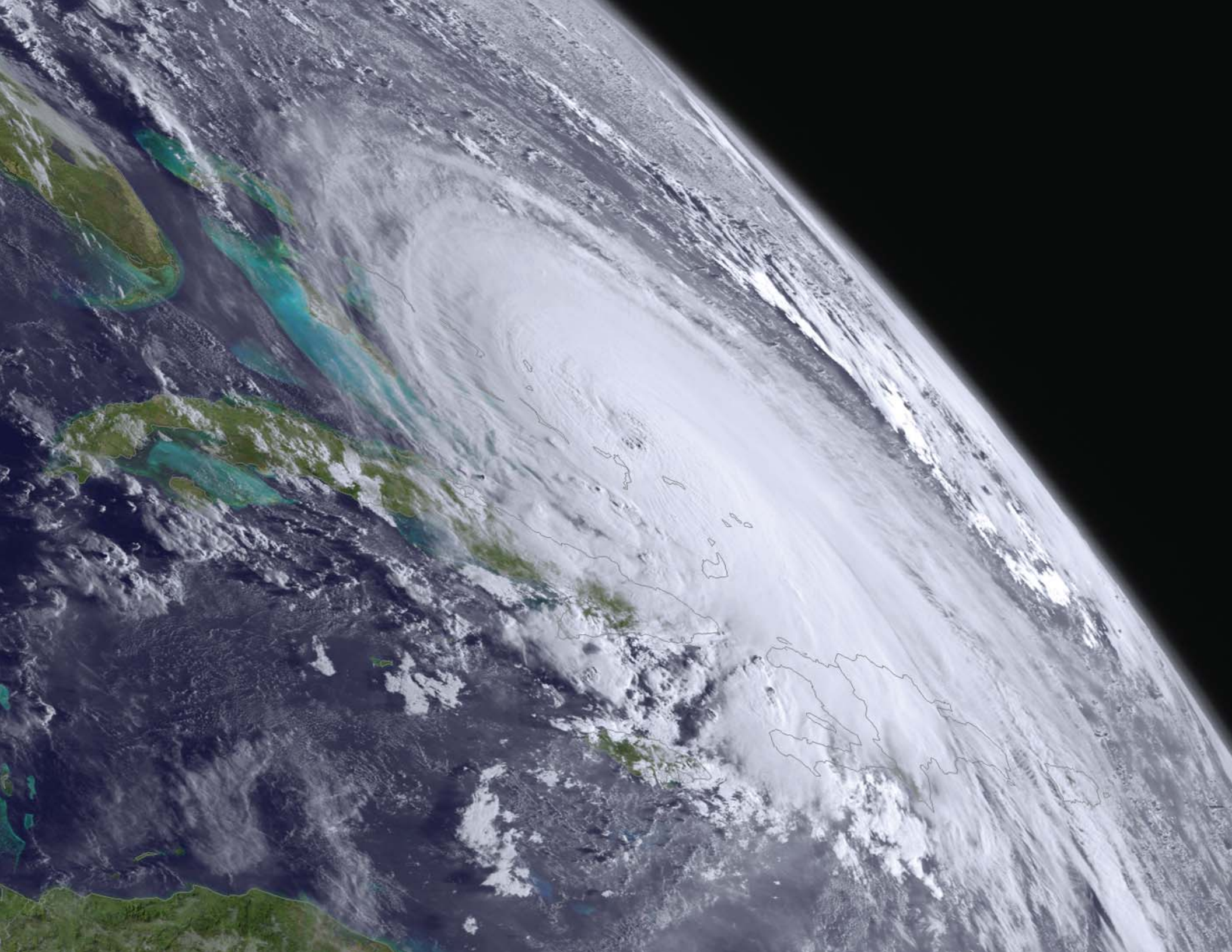
Improving severe weather forecasting

New products and tools for forecasting severe weather are being tested through the GOES-R Proving Ground. The ProbSevere tool integrates geostationary satellite data, radar, and weather prediction models to predict the probability that a storm will produce severe weather. The Convective Initiation product detects rapidly forming cumulus clouds in a pre-convective state and can determine where significant convection will develop. The more frequent images, improved spatial resolution, and increase in spectral bands for inferring cloud properties that will be available from the Advanced Baseline Imager will improve upon these products in the GOES-R era. These advanced observations will give forecasters more confidence during their warning decision-making and increase lead time for severe storm warnings.

The ProbSevere tool shown during a severe storm on June 18, 2015. This data showed a high probability of severe weather prior to the first severe weather reports and National Weather Service warning.



Credit: NOAA/ Cooperative Institute for Meteorological Satellite Studies



Major Hurricane Joaquin is shown at the far eastern periphery of the GOES West satellite's full disk extent, taken on October 1, 2015. Credit: NOAA Environmental Visualization Laboratory

August 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

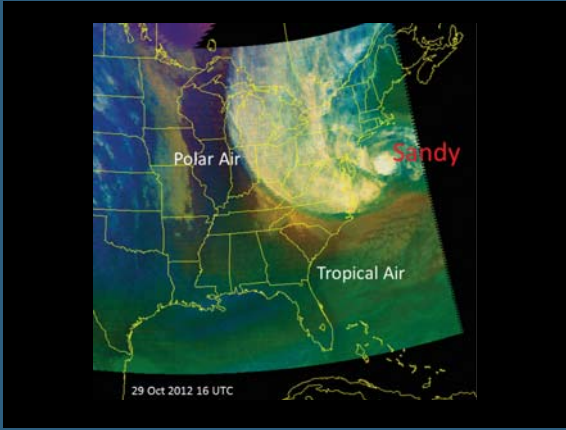
LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	<div>○</div> 2	3	4	5	6
7	8	9 <div>NOAA-13 launched, 1993</div>	<div>◐</div> 10	11	12	13
14	15	16	17	<div>●</div> 18	19	20
21	22	23	<div>◐</div> 24	25	26	27
28	29	30	31		<div>JULY</div> <div><div>S</div><div>M</div><div>T</div><div>W</div><div>T</div><div>F</div><div>S</div></div> <div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>1</div></div> <div><div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>2</div></div> <div><div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>3</div></div> <div><div>24</div><div>25</div><div>26</div><div>27</div><div>28</div><div>29</div><div>4</div></div> <div><div>31</div><div></div><div></div><div></div><div></div><div></div><div>5</div></div> <div><div>SEPTEMBER</div><div><div>S</div><div>M</div><div>T</div><div>W</div><div>T</div><div>F</div><div>S</div></div><div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>2</div><div>1</div></div><div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>3</div><div>9</div></div><div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>10</div><div>17</div></div><div><div>25</div><div>26</div><div>27</div><div>28</div><div>29</div><div>11</div><div>24</div></div><div><div></div><div></div><div></div><div></div><div></div><div>12</div><div>30</div></div></div>	

Better data for hurricane tracking and intensity forecasts

The advanced observational capabilities available from the GOES-R series will enable NOAA's National Hurricane Center to estimate hurricane track and intensity more accurately, leading to improved forecasts and extended forecast lead times. The improved performance and better resolution of the Advanced Baseline imager will allow for better characterization of small hurricane eyes and provide real-time estimates of hurricane central pressure and maximum sustained winds. Data from the Geostationary Lightning Mapper will inform forecasters about changes in lightning activity in the eyewall and rainbands of tropical cyclones, which can be used as an indication for intensity changes, especially rapid intensification.

The RGB (red-green-blue) air mass product shown during Hurricane Sandy in 2012. This product allowed forecasters and analysts to identify the large-scale weather systems that would interact with Sandy prior to landfall, therefore leading to improved forecast confidence.



Credit: NOAA



Coast Guard Petty Officer 3rd Class Joshua Zartman pulls 10-year-old Nmir Ali Mahmoud toward a Coast Guard boat while rescuing him near Mayport, Fla., Saturday, May 24, 2014. Photo: U.S. Coast Guard

September 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

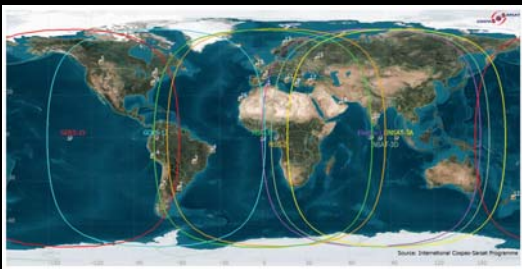
LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																													
<div><div>AUGUST</div><table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr><tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr><tr><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td><td></td></tr></table></div>	S	M	T	W	T	F	S	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				<div><div>OCTOBER</div><table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr><tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr><tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr><tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td></tr></table></div>	S	M	T	W	T	F	S	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								<div>1</div> <div></div>	<div>2</div> <div></div>	<div>3</div> <div></div>
S	M	T	W	T	F	S																																																																													
7	8	9	10	11	12	13																																																																													
14	15	16	17	18	19	20																																																																													
21	22	23	24	25	26	27																																																																													
28	29	30	31																																																																																
S	M	T	W	T	F	S																																																																													
2	3	4	5	6	7	8																																																																													
9	10	11	12	13	14	15																																																																													
16	17	18	19	20	21	22																																																																													
23	24	25	26	27	28	29																																																																													
30	31																																																																																		
<div>4</div> <div></div>	<div>5</div> <div>Labor Day</div>	<div>6</div> <div></div>	<div>7</div> <div></div>	<div>8</div> <div></div>	<div>9</div> <div>GOES-4 launched, 1980</div>	<div>10</div> <div></div>																																																																													
<div>11</div> <div></div>	<div>12</div> <div></div>	<div>13</div> <div></div>	<div>14</div> <div></div>	<div>15</div> <div></div>	<div>16</div> <div></div>	<div>17</div> <div>NOAA-10 launched, 1986</div>																																																																													
<div>18</div> <div></div>	<div>19</div> <div></div>	<div>20</div> <div></div>	<div>21</div> <div>NOAA-16 launched, 2000</div>	<div>22</div> <div>Autumnal Equinox</div>	<div>23</div> <div></div>	<div>24</div> <div>NOAA-11 launched, 1988</div>																																																																													
<div>25</div> <div></div>	<div>26</div> <div></div>	<div>27</div> <div></div>	<div>28</div> <div></div>	<div>29</div> <div></div>	<div>30</div> <div></div>																																																																														

Saving lives

As an integral part of worldwide search and rescue, NOAA operates the Search And Rescue Satellite Aided Tracking (SARSAT) System to detect and locate mariners, aviators, and recreational enthusiasts in distress. It has contributed to thousands of rescues in the United States and around the world. The GOES-R series satellites will carry a dedicated SARSAT transponder to detect signals transmitted from emergency beacons on aircraft, maritime vessels, or carried by individuals. The transponder provides constant coverage to immediately receive and relay emergency beacon alerts to a network of ground stations. In turn, this signal is routed to a SARSAT Mission Control Center and then sent to the Rescue Coordination Center nearest the alert, which dispatches a search and rescue team to the location of the distress. The GOES-R series SARSAT transponder will operate with a lower uplink power than the current system, enabling the satellites to detect weaker beacon signals.

Worldwide geostationary satellite SARSAT coverage.



Credit: COSPAS-SARSAT



An Atlas V rocket satellite launch. The GOES-R weather satellite will launch in October 2016 on a similar rocket. Credit: United Launch Alliance

October 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

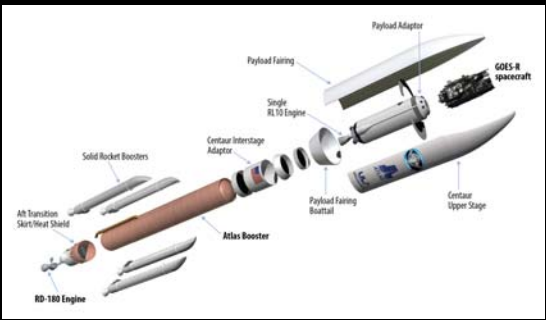
LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																						
<div>SEPTEMBER</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>1</td><td>2</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr><tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr><tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td></td></tr></table>	S	M	T	W	T	F	S	4	5	6	7	8	1	2	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		<div>NOVEMBER</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr><tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr><tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr><tr><td>27</td><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30								1
S	M	T	W	T	F	S																																																																						
4	5	6	7	8	1	2																																																																						
11	12	13	14	15	16	17																																																																						
18	19	20	21	22	23	24																																																																						
25	26	27	28	29	30																																																																							
S	M	T	W	T	F	S																																																																						
6	7	8	9	10	11	12																																																																						
13	14	15	16	17	18	19																																																																						
20	21	22	23	24	25	26																																																																						
27	28	29	30																																																																									
2	3	4	5	6	7	8																																																																						
9	10	11	12	13	14	15																																																																						
	Columbus Day					NOAA-2 launched, 1972																																																																						
16	17	18	19	20	21	22																																																																						
GOES-1 launched, 1975																																																																												
23	24	25	26	27	28	29																																																																						
30	31				Suomi NPP launched, 2011																																																																							

Launching GOES-R

The GOES-R satellite will launch from Space Launch Complex-41 at Cape Canaveral Air Force Station, Florida, aboard an Atlas V 541 expendable launch vehicle. The term expendable launch vehicle means each vehicle is only used once. The three numbers in the 541 designation signify a payload fairing, or nose cone, that is approximately 5 meters (16.4 feet) in diameter; four solid-rocket boosters fastened alongside the central common core booster; and a one-engine Centaur upper stage. A launch vehicle is chosen based on how much mass the vehicle can lift into space. A two-stage Atlas V 541 launch vehicle was selected for the GOES-R launch because it has the right liftoff capability for the heavy weight requirements.

Atlas V 541 expendable launch vehicle.



Credit: United Launch Alliance



Smoke plumes from wide-spread fires across Idaho, Utah and Montana are featured in this image photographed by an Expedition 15 crewmember on the International Space Station on August 13, 2007. Credit: NASA

November 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																				
		1	2	3	4	5																																																																																				
6 NOAA-3 launched, 1973 Daylight Saving Time ends	7	8 Election Day	9	10	11 Veterans Day	12																																																																																				
13	14	15 NOAA-4 launched, 1974	16	17	18	19																																																																																				
20	21	22	23	24 Thanksgiving Day	25	26																																																																																				
27	28	29	30 Atlantic hurricane season ends		<div>OCTOBER</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>1</td></tr><tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>8</td></tr><tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td></tr><tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td></tr><tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	2	3	4	5	6	7	1	9	10	11	12	13	14	8	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31						<div>DECEMBER</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr><tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr><tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr></table>	S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
S	M	T	W	T	F	S																																																																																				
2	3	4	5	6	7	1																																																																																				
9	10	11	12	13	14	8																																																																																				
16	17	18	19	20	21	22																																																																																				
23	24	25	26	27	28	29																																																																																				
30	31																																																																																									
S	M	T	W	T	F	S																																																																																				
				1	2	3																																																																																				
4	5	6	7	8	9	10																																																																																				
11	12	13	14	15	16	17																																																																																				
18	19	20	21	22	23	24																																																																																				
25	26	27	28	29	30	31																																																																																				

Watching out for wildfires

Smoke from wildfires, volcanic ash, and dust clouds all have tremendous environmental impacts on everyday life. A series of wildfires in Ventura County, California (northwest of Los Angeles) burned over 6,500 acres in May 2013 according to the U.S. Forest Service. The Suomi NPP VIIRS instrument collects high-resolution visible and infrared imagery, generating critical environmental observations of fire, smoke plumes and aerosols.

A stream of smoke is clearly visible in this Suomi NPP VIIRS image, moving west over the ocean, as are the heat signatures from the active fires areas.



Credit: NOAA Environmental Visualization Laboratory



This image was created by the Day/Night Band of the VIIRS instrument on board the NOAA/NASA Suomi NPP Satellite. Credit: NOAA's National Geophysical Data Center/NASA Earth Observatory

December 2016

Moon phases are Universal Time (UT)

NEW MOON

FIRST QUARTER

FULL MOON

LAST QUARTER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																													
<div>NOVEMBER</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr><tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr><tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr><tr><td>27</td><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				<div>JANUARY</div> <table><tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr><tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr><tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr><tr><td>29</td><td>30</td><td>31</td><td></td><td></td><td></td><td></td></tr></table>	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							1	2	3
S	M	T	W	T	F	S																																																																													
6	7	8	9	10	11	12																																																																													
13	14	15	16	17	18	19																																																																													
20	21	22	23	24	25	26																																																																													
27	28	29	30																																																																																
S	M	T	W	T	F	S																																																																													
1	2	3	4	5	6	7																																																																													
8	9	10	11	12	13	14																																																																													
15	16	17	18	19	20	21																																																																													
22	23	24	25	26	27	28																																																																													
29	30	31																																																																																	
4	5	6 <div>ATS-1 launched, 1966</div>	7 <div></div>	8	9	10																																																																													
11 <div>NOAA-1 launched, 1970</div>	12	13 <div></div>	14	15	16	17																																																																													
18	19	20 <div></div>	21	22	23	24 <div>NOAA-9 launched, 1984</div>																																																																													
25 <div>Christmas Day</div>	26	27	28 <div></div>	29	30 <div>NOAA-14 launched, 1994</div>	31																																																																													

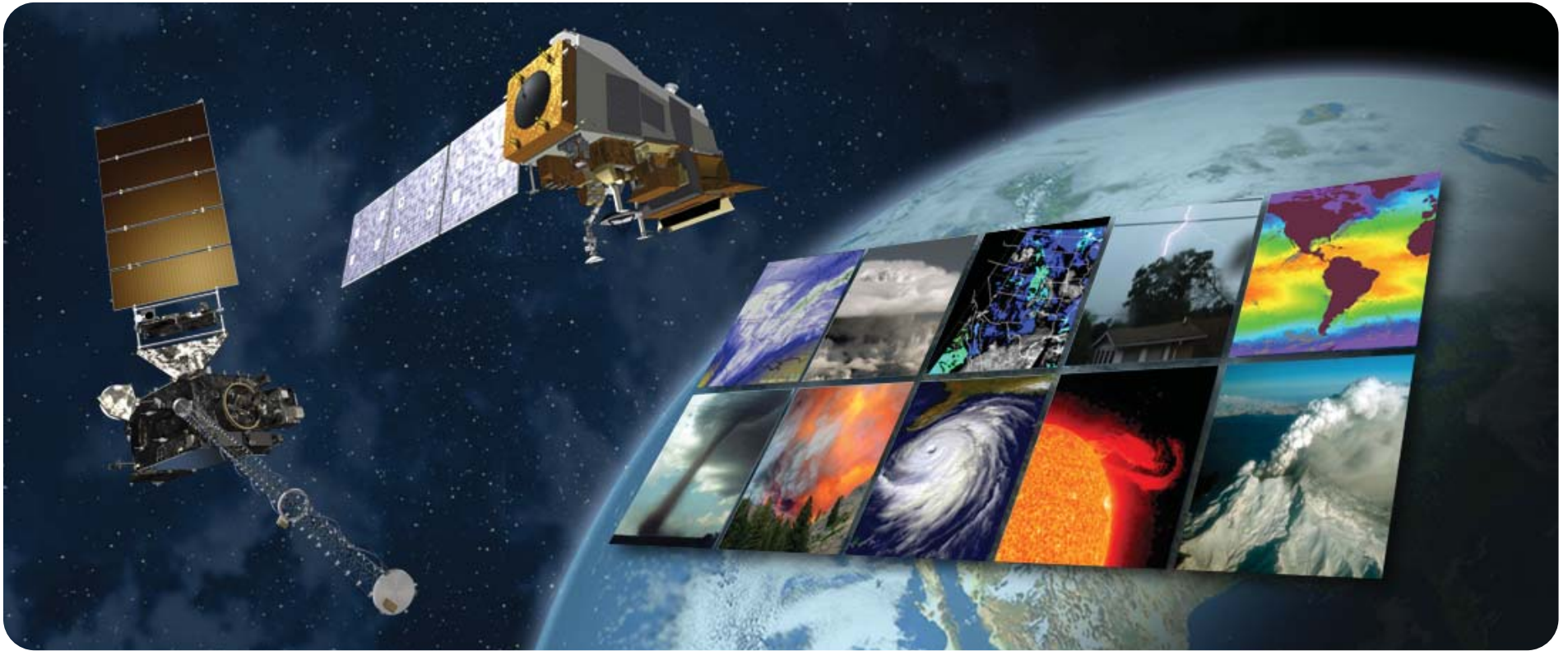
The Earth at night

JPSS’s VIIRS instrument has a Day/Night band with the unique ability to capture imagery of the Earth at night. The Day/Night band detects low levels of visible and near-infrared radiance. This means that low clouds, fog, snow cover and other sources will be visible to JPSS at night. The Day/Night band capability has proven invaluable in the arctic regions for differentiating cloud, ice and snow cover. The imagery has also been used with city light maps to model the distribution of economic activity and populations, monitor human development around parks and wildlife refuges, and to observe blackout areas following hurricane landfalls.

This composite night image of Europe, Africa and parts of Asia taken by Suomi NPP’s VIIRS instrument was assembled over several days in 2012. It shows how the planet looks at night, with the lights from our cities dotting the landscape and illuminating the night sky.



Credit: Chris Elvidge National Centers for Environmental Information (NCEI), NOAA/NASA Suomi NPP, VIIRS instrument.



Each month of this 2016 calendar has more information about the capabilities and products of GOES-R and JPSS.

For more information, visit the GOES-R and JPSS web sites at www.goes-r.gov and www.jpss.noaa.gov.

For information for students, visit NOAA's SciJinks web site at scijinks.gov.



GOES-R Facebook: www.facebook.com/GOESRsatellite



NOAA Satellites Facebook: www.facebook.com/NOAANESDIS



NOAA Satellites Twitter: twitter.com/NOAASatellites



NOAA Satellites YouTube: www.youtube.com/NOAASatellites



NOAA Satellites Flickr: www.flickr.com/noaasatellites